

Atty. Docket No. 2003-0048-01
USSN 10/672,722

Remarks

Claims 1-67 are pending in the above captioned application. Claims 1, 2 and 41-67 are allowed. Claims 3-12, 25, 25 and 37 stand rejected. Claims 13-23, 26-36 are allowable is rewritten to overcome rejections under 35 U.S.C. §112, 2nd paragraph and claims 38-40 are objected to as depending from a rejected base claim, but allowable if rewritten o contain the limitations of the base claim and any intervening claims.

Claims 11 and 37 have been amended to correct the informalities of the claims noted by the Examiner. These claims have been amended only for the purpose of correcting obvious inaccuracies in the recitation of claim elements with proper antecedent basis and not for the purposes of defining over any prior art and also not with the intent to or effect of narrowing the claims in any way. In fact the amendments broaden the claims to cover that which they would not have covered as filed, due to the errors in proper recitation of antecedent basis.

Claims 5 and six have been amended to correct obvious typographical errors and in the case of claim 6 to properly recite antecedent basis. These claims have been amended only for the purpose of correcting obvious typographical errors or inaccuracy in the recitation of claim elements with proper antecedent basis and not for the purposes of defining over any prior art and also not with the intent to or effect of narrowing the claims in any way. In fact the amendments broaden the claims to cover that which they would not have covered as filed, due to the typographical errors and errors in proper recitation of antecedent basis.

Claims 3-10 stand rejected under 35 U.S. C. §103(a) as being unpatentable over United States Patent No. 6,466,602 entitled GAS DISCHARGE LASER LONG LIFE ELECTODES, issued to Fleurov, et al. on October 15, 2002 ("Fleurov") in view of United States Patent No. 5,982,803, entitled FREE-SPACE GAS SLAB LASER, issued to Sukhman et al. on November 9, 1999 ("Sukhman").

Applicants respectfully disagree that the combinations of Fleurov and Sukhman create a *prima facie* case for obviousness, since, e.g., Sukhman is a CO2 laser without the problems engendered by a laser comprising a laser gas containing fluorine, and a portion of Sukhman to which the Examiner refers (Col. 3, lines 39-42) discusses optimizing laser performance of the CO2 laser by selecting an electrode separation, rather than

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optimization by use of anodization, and further, at least some of the dependent claims 4-10 ad elements not taught or suggested by Fleurov or Sukhman or the combination of these two references. However, applicants also note that Fleurov, assigned to the common assignee of the above captioned application, and at the time of the invention(s) claimed in the above captioned application being owned by the common assignee of the above captioned application, is not a proper §103 reference. (§103 (c))

Therefore, the Examiner's combination of Fleurov and Sukhman is improper and for that reason the rejection of claims 3-10 under 35 U.S.C. §103 (a) is improper and the Examiner is respectfully requested to withdraw the rejection of claims 3-10 and allow claims 3-10.

Claims 11-12 and 24-25 stand rejected under 35 U.S.C. §103 (e) as being unpatentable over Sukhman in view of United States Patent No. 4,837,773, entitled DISCHARGE EXCITATION TYPE SHORT PULSE LASER, issued to Wakata et al. on June 6, 1989 ("Wakata").

The Examiner has taken the position that as to claims 11 and 12:

figures 4 and 5 of Sukhman disclose an elongated gas discharge anode (91 & 92) with a discharge region extending longitudinally along the surface of the elongated gas discharge laser with a portion of the discharge region covered with a pre-formed reef formed of an anodized material (Col. 3, lines 39-42). sukhman does not disclose anode pores.

Figure 6 of Wakata discloses an electrode (6) with generally uniform pore size and spacing to obtain an electrical discharge in the pores of the electrode (col. 5, lines 15-18.

As to claims 24 and 25 the Examiner has noted:

the reef disclosed in Sukhman is made from aluminum (col. 3, lines 39-42).

Applicants respectfully traverse the rejection of claims 11-12 and 24-25 under 35 U.S.C. §103 (a).

The Specification of the above captioned application notes:

Another embodiment may comprise at least a portion of the discharge region of a gas discharge electrode is covered with a pre-formed reef having generally uniform pore size and distribution. (p. 3, lines 23-25)

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In addition the Specification notes:

Applicants also investigated the effects of cathode wear morphology on anode erosion, i.e., anode-cathode wear interactions. Applicants have been aware that cathode segments opposite self-passivating alloys ("reefing alloys) appear to wear quickly, and that anodes wear faster across from cathodes that pit. applicants have given these self-passivating structures the name "reef" because of the general appearance of a coral reef formed on the substrate electrode material in the self-passivating process and the terms are used interchangeably in this application. (p. 8, line 20 – p. 9, line 3)

Also the specification explains in somewhat more detail the concept of what an artificially created "reef" is in the context of gas discharge lasers including laser gas containing fluorine:

One form of passivation layer/reefing engineering that applicants have discovered makes use of processes such as those utilized in the manufacture of tin nanowires using a vacuum infiltrated porous anodization of aluminum. Such techniques can enable the creation of a synthetically created reef layer made of, e.g. a metal fluoride, on an electrode created with relatively controlled pore size and distribution, having such properties as a controlled and evenly distributed porosity, e.g., as an anode reefing layer. In this manner the barrier reef may be engineered for controlled chemical and electrical properties, e.g., impedance, e.g., to control the surface charge on the reef to, e.g., avoid arcing, and in this manner optimize corrosion/erosion resistance and optimize impedance.

In the portion of the Sukhman reference to which the Examiner refers, the reference discloses quite a different coating than a "reef" as discussed and described in the Specification of the above captioned application. Sukhman discloses for a CO₂ laser that is not indicated to have the kinds of electrode erosion and lifetime limitations noted above and elsewhere within the Specification of the above captioned application, e.g., due to the gas discharge laser having a laser gas containing fluorine:

each electrode is an elongated, T-shaped electrode made of anodized aluminum having an aluminum oxide coating on the range of 0.025-0.01 mm. (Col. 3, lines 39-42)

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This does not constitute the claimed "pre-formed reef having generally uniform pore size and distribution."

To fill in this element missing from Sukhman, the Examiner states that "Figure 6 of Wakata discloses an electrode (6) with generally uniform pore size and spacing to obtain an electric discharge in the pores of the electrode (col. 5, lines 15-18). In that portion of Wakata, along with the beginning of the paragraph there is disclosed a laser discharge preionizer:

In the laser device thus organized, first the capacitor 1 is charged by the high voltage through the inductance 3, and then the high voltage switch 4 is turned on to complete the loop of the capacitor 1, the peaking capacitor 2 and the high voltage switch 4, so that the peaking capacitor 2 is quickly charged by the pulse voltage. As the voltage developed across the first and second main electrodes 5 and 6, a loop of the inductance 17, the capacitor 18, the auxiliary electrode 16, the dielectric 15, the second main electrode 6 and the high voltage switch 4 is completed, and accordingly the preliminary ionization circuit A is completed. As a result, the time constant setting capacitor 18 and the capacitor formed by the main electrode 6, the dielectric 15 and the auxiliary electrode 16 are discharged, so that a creeping electric discharge occurs in each of the pores of the second main electrode 6 to achieve the preliminary ionization. (Col. 5, lines 1-18)

This is otherwise described elsewhere in the Specification of the Wakata reference in regard to the same structure in the prior art:

With such a laser device as shown in FIG. 2, a second main electrode 6 has a number of holes, and a dielectric material 15 is laid between the porous main electrode 6 and an auxiliary electrode 16 to form a capacitor which is connected in parallel to peaking capacitor 2. (Col. 2, lines 15-19)

Whether or not the Examiner has established *prima facie* obviousness allocates the burden of going forward with the evidence during the examination process.¹ Initially

¹ M.P.E.P. §2142. See *In re Rinehart*, 531 F.2d 1048, 189 U.S.P.Q. 143 (C.C.P.A. 1976); *In re Linter*, 458 F.2d 1013, 173 U.S.P.Q. 560 (C.C.P.A. 1972); *In re Saunders*, 444 F.2d 599, 170 U.S.P.Q. 213 (C.C.P.A. 1971); *In re Tiffin*, 443 F.2d 394, 170 U.S.P.Q. 88 (C.C.P.A. 1971), *amended*, 448 F.2d 791, 171 U.S.P.Q.

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the burden of going forward is on the Examiner to establish *prima facie* obviousness otherwise the applicant has no obligation to submit evidence of nonobviousness.²

Prima facie obviousness is established by a "suggestion or motivation," either in the references themselves or in the ordinary skill of the art, to modify the reference or to combine references, a "reasonable expectation of success," and the combination must teach or suggest all the claim limitations.³ Initially the Examiner must show "some suggestion of the desirability of doing what the inventor has done."⁴ Either "the references must expressly or impliedly suggest the claimed invention" or the Examiner "must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references."⁵ The Examiner is also required to show from the record that the suggestion to combine is in the references and bald statements of obviousness to combine, or that the combination "involves routine skill in the art" cannot stand under *In re Lee*, 277 F.3d 1338, 1345, 61 U.S.P.Q.2d 1430 (Fed. Cir. 2002) ("deficiencies of the cited references cannot be remedied by the Board's general conclusions about what is "basic knowledge" or "common sense." The Board's findings must extend to all material facts and must be documented on the record, lest the "haze of so-called expertise" acquire insulation from accountability.") or *In re Thrift*, 298 F.3d 1357, 1362, 63 U.S.P.Q.2d 2002 (Fed. Cir. 2002) (finding of obviousness as to one claim was proper where references themselves suggested combination but that simple assertion that "[t]he use of grammar is old and well known in the art of speech recognition as a means of optimization which is highly desirable," did not make out a case of *prima facie* obviousness).

Unless the motivation to combine the references is "immediately apparent," the Examiner must explain why the combination is proper.⁶

294 (C.C.P.A. 1971); *In re Warner*, 379 F.2d 1011, 154 U.S.P.Q. 173 (C.C.P.A. 1967), *cert. denied*, 389 U.S. 1057 (1968).

² M.P.E.P. §2142.

³ M.P.E.P. §2142. Such teaching or suggestion and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. M.P.E.P. §2142. See *In re Vaack*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991). See M.P.E.P. §§ 2143 - 2143.03 regarding these criteria.

⁴ M.P.E.P. §2142.

⁵ M.P.E.P. §2142. *Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985). See M.P.E.P. §§2144 - 2144.09 regarding reasoning supporting obviousness rejections.

⁶ M.P.E.P. §2142. See *Ex parte Skinner*, 2 U.S.P.Q.2d 1788 (Bd. Pat. App. & Inter. 1986). A rejection including numerous grounds for rejections must explain with "reasonable specificity" at least one rejection, or no *prima facie* obviousness exists. M.P.E.P. §2142. See *Ex parte Blanc*, 13 U.S.P.Q.2d 1383 (Bd. Pat.

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The teachings of the references must suggest to the person of ordinary skill to make the substitution, combination or other modification.⁷ The teaching or suggestion to combine must come from the references themselves "either explicitly or implicitly" or from "the knowledge generally available to one of ordinary skill in the art."⁸ An "implicit" teaching or suggestion comes from the "combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole."⁹ For *prima facie* obviousness all of the claim limitations must be taught or suggested by the prior art.¹⁰ If an independent claim is nonobvious any claim depending from the independent claim is also nonobvious.¹¹

If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. M.P.E.P. §2143.01, citing, *In re Ratti*, 270 F.2d 810, 813, 123 USPQ 349, 352 (CCPA 1959) ("suggested combination of references would require a substantial reconstruction and redesign of the elements shown in [the primary reference] as well as a change in the basic principle under which the [primary reference] construction was designed to operate.")

Applicants submit that the Examiner has not shown a *prima facie* case for obviousness under the law noted above, since, neither Sukhman nor Wakata teaches or

App. & Inter. 1989) (rejection based on nine references with at least 40 prior art rejections and no explanation of any one rejection with reasonable specificity reversed).

⁷ M.P.E.P. §2143.01. See *In re Linter*, 458 F.2d 1013, 1016, 173 U.S.P.Q. 560, 562 (C.C.P.A. 1972).

⁸ M.P.E.P. §2143.01.

⁹ M.P.E.P. §2143.01. See *In re Kotzab*, 217 F.3d 1365, 1370-71, 55 U.S.P.Q.2d 1313, 1317-18 (Fed. Cir. 2000) (reference showing a multizone injection molder having multiple temperature control sensors controlling respective multiple flow control valves and another showing one system to control multiple valves were not properly combined to reject a claim to a single sensor controlling the multiple valves; though a "technologically simple concept," without a showing "as to the specific understanding or principle within the knowledge of the skilled artisan" that provided the motivation to combine); *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988) (reference showing system for monitoring sulfur compounds with a chromatograph, combustion means, and a detector, and another showing nitric oxide detectors was not properly combined to reject a claim to a nitrogen compound detector having a chromatograph, a converter converting the compounds to nitric oxide via combustion and a nitric oxide detector, without explanation or support for the conclusion that the person of skill in the art would have known to substitute the one detector for the other); *In re Jones*, 958 F.2d 347, 21 U.S.P.Q.2d 1941 (Fed. Cir. 1992) (reference showing substituted ammonium salts of dicamba as herbicides, but not the specifically claimed salt, and another showing the amine portion of the salt as a shampoo additive were not properly combined to reject a claim for 2-(2- α -aminoethoxy) ethanol salt of dicamba as a herbicide, without the showing of a suggestion to combine).

¹⁰ M.P.E.P. §2143.03. See *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974); *In re Wilson*, 424 F.2d 1382, 1385, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970) (must consider all of the claim language).

¹¹ M.P.E.P. §2143.03. See *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988).

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suggests the claimed "discharge region covered with a pre-formed reef having generally uniform pore size," and thus not all elements of the claimed invention are found in the combination of references. Further, even if the electrode (6) in Wakata constituted an electrode covered with such a reef, which it does not, there is no suggestion to combine features from Wakata, disclosing a preionizer with electrodes in fluorine gas discharge lasers for the purposes of improving laser electrode lifetime, and there is not reason to believe one skilled in the art would believe that the electrode having holes in it from Wakata should be a successful solution to the kinds of laser electrode lifetime problems solved by the claimed invention as discussed above and elsewhere in the Specification of the above captioned application.

For these reasons, the applicants respectfully submit that the Examiner's rejection of claim 11 is improper and respectfully request the Examiner to withdraw the rejection of claim 11 and allow claim 11.

Claims 12, 24 and 25 are allowable along with the allowed claim 11. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988), and the objections to claims 13-23 and 26-36 are overcome since claim 11 is allowable.

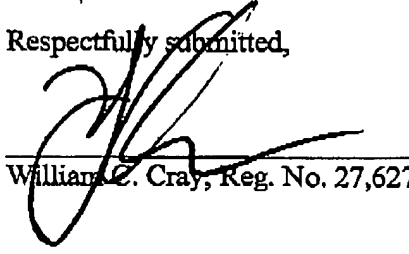
For the above stated reasons the Examiner's rejections of claims 11, 12, 24 and 25 and objections to claims 13-23 and 26-36 are improper and the Examiner is respectfully requested to withdraw them and allow claims 11-36.

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Conclusion

For the above stated reasons, applicants believe that claims 1-67 pending in the above captioned application are allowable and the Examiner is respectfully requested to withdraw the rejections of claims 3-12, 24, 25 and 37 and the objections to claims 13-23, 26-36 and 38-40, and allow these claims.

Respectfully submitted,


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